

Telcon
Distributed
Communications
Processor/10A



The new SPERRY Distributed Communications Processor/10A (DCP/10A) system is a small, versatile and cost-effective system designed to provide intelligent network communications in a wide variety of applications for both large and small users.

The DCP/10A is the entry level member of the DCP family and can be used in the same network as the DCP/10, which it supersedes, and the DCP/20 and DCP/40.

It is based on a unified family of hardware and software that uses the same Communications

Processor Architecture (CPA) and Telcon communications software available for the DCP/10, DCP/20 and DCP/40.

Optimized for the less demanding communications environments, the DCP/10A is a front-end processor for smaller Series 1100 host computer systems. It can also function as a low-cost network processor and as a remote concentrator. It is capable of simultaneously supporting transaction processing, time-sharing, remote job entry and distributed processing applications.

The system is low in cost, small in size and easy to install. Step-by-step instructions are provided for unpacking the system, connecting communications equipments (other than host-related interfaces), connecting the line module interfaces to the peripherals and verifying hardware operation.

The Telcon system's extensive communications capabilities include interfaces to both circuit (X.21) and packet (X.25) public data networks.

The processor is based on advanced NMOS, very large scale integration technology. It incorporates highly advanced techniques that assure the accurate, secure transmission of all data.

Memory for the DCP/10A is an integrated circuit, error correcting storage system of 512K bytes, which can be expanded in 512K byte increments to 2.0 M bytes.

If your plans include data processing within a telecommunications environment, the SPERRY DCP/10A Telcon system is for you. Contact your local Sperry office for further details.

More About the DCP/10A

The DCP/10A provides network control handling a wide range of data transmission rates and multiple terminal types. It can be tailored to fit your data processing and data transmission needs, is modular, and is able to grow as your needs dictate.

The DCP/10A hardware consists of three main components: a processor; local storage; and communications line modules. These components come in a 19-inch enclosure that can either be mounted in an existing communications cabinet or can be delivered in a cabinet tailored for the DCP/10A.

Available peripherals include the integrated 10 MB mass storage disk subsystems. Host interface modules are also available.

The DCP/10A accommodates asynchronous, synchronous and wideband transmissions at speeds up to 64KB per second. It provides support for the Universal Data Link Control procedure as well as a full range of character-oriented communications protocols.

Telcon network control software resides in all DCP/10A front end, network and remote processors and performs routing and processing within the network. This includes: host interfaces; network management; internetwork control; line termination and handling; statistics; error control; on-line diagnostics; status monitoring; command processing; system synchronization and others.

The DCP/10A is controlled in two ways:

- by microinstructions that operate at a high-speed cycle time of 250 nanoseconds (ns).
- by a repertoire of programming instructions executed in local storage.

There are approximately 385 programming instructions for general message processing as well as a full range of input/output activities including:

- Reception and transmission of data
- Polling and calling for data from remote terminals
- Allocating buffers for temporary storage of input and output messages
- Checking messages for errors and requesting retransmission when necessary
- Reporting operational status of the communications lines
- Maintaining traffic and error statistics.



Distributed Communications Processor/10A

PHYSICAL CHARACTERISTICS

Basic Enclosure:

Width: 19 inches (48 cm)
Height: 16 inches (40 cm)
Depth: 28 inches (71 cm)
Weight: 75 lbs (34 kg)

DCP/10A Cabinet

Width: 23 inches (50 cm)
Height: 37.5 inches (95 cm)
Depth: 31 inches (79 cm)
Weight: 210 lbs (95 kg)

POWER REQUIREMENTS

Nominal voltages: 100, 120, 220, 240 volts
Nominal frequency: 50 or 60 Hz
Phase: Single phase—2 wire plus safety ground
Power: .54 kva—Approximate power consumption

ENVIRONMENTAL CHARACTERISTICS

Nominal working range:

Temperature: 54°F—90°F
12°C—32°C
Humidity: 20% to 80%

The Processor and Storage

The processor is a microprogrammable device that has direct access to local storage. Specific program tasks are accomplished by software routines executed within microprocessor-based arithmetic logic units and registers.

The processor performs both generalized communications processing as well as input/output processing functions. The I/O processing functions provide programmed control for up to 8 data paths. These may be a combination of serial lines to remote equipment, channels to peripheral devices, or channel connections to on-site Series 1100 host systems.

Processor

FUNCTIONAL CHARACTERISTICS

Instruction Repertoire: 300 communications instructions
Input/output instructions: 85
Microprogrammed: 16-bit microinstruction
Microcycle time: 250 ns
General registers: 32
Input/output ports: 8 for full/half duplex serial or parallel line modules.

Storage

FUNCTIONAL CHARACTERISTICS

Capacity: 2.0 M bytes
Integrity: all single bit errors are corrected and all double bit errors are detected. All errors are automatically logged.
Word length: 16 bits plus 2 parity bits at the interface; 16 bits plus 6 error correcting bits internally.
Speed: read cycle = 1 micro second
full word write cycle = 750 ns

Data Security Design

The DCP/10A processing components are designed to meet the demand for security and privacy in electronic data handling.

A wide range of protective mechanisms at both the software and hardware levels safeguard the DCP/10A data from error, unwarranted intrusions and inadvertent modification. These mechanisms include privileged instructions and virtual addressing techniques as well as advanced methods unique to the DCP/10A.

The protective mechanisms used by the DCP/10A include:

- Dual ALUs with result comparison within the processor
- Byte parity checking on data buses and internal registers
- Error logging of microcontroller failure and errors
- Storage protection to control access rights to local storage
- Levels of privilege to reserve instructions in executive software
- Architectural designs that confine and isolate programs and data within protected environments
- Error detection and recovery procedures to protect data from inadvertent alteration
- Autorecovery and autorestart procedures for recovery from power interrupts or other system failures.

The DCP/10A is dedicated at all levels to preserving privacy and security for electronic data transfer.

Communications Line Modules

Microprogrammable line modules operate the 8 communications ports supported by the input/output processing function. Each port requires one line module, capable of handling full-duplex or half-duplex communications. All communication line modules terminate one line per port except the multi-line asynchronous line module that multiplexes four circuits onto one port.

In addition to providing a hardware interface, a line module performs communications functions for each line in a system.

Line module functions include:

- Character assembly/disassembly
- Character parity and block check sequence generation and checking
- Data buffering
- Control character recognition
- Line timing and asynchronous clocking
- Automatic data rate detection

FUNCTIONAL CHARACTERISTICS

Electrical Interfaces

The following electrical interfaces are supported for line speeds up to 64K bps:

- RS232C (V.24, V.28)
- V.35
- Auto Dial (US RS366)
- Auto Dial (Japan NTT)
- RS 449
- Bell 303
- X.21

Parallel Line Modules

These modules provide the hardware interface between peripheral subsystems or host processors and the DCP/10A. Five parallel modules are provided:

- The host word channel module, which provides full duplex, 32-bit interface to a SPERRY Series 1100 host word channel
- The byte I/F line module, which provides an 8-bit interface to the 8409 disk subsystem and free-standing flexible disk subsystem
- Multiple device line module uses the ANSI-standard SCSI to connect the integrated disk and diskette drives

- The block multiplexer line module, which provides connection to the host computer through direct byte channel

- The Front End Processor Interface line module connects a Sperry System 11 processor to a free standing DCP/10A.

8409 Disk Subsystem

This subsystem is a freestanding, medium performance mass storage device offered for those communications environments where extensive capability is required. It can be used as storage for Telcon system files, network data base files and distributed data processing applications.

The subsystem can be ordered with one or two disk drive assemblies. Each supports up to 23 megabytes of storage.

PHYSICAL CHARACTERISTICS

Height: 31 inches (79 cm)

Width: 23 inches (58 cm)

Depth: 29 inches (74 cm)

Weight (with two drives): 256 lbs (71 kg)

FUNCTIONAL CHARACTERISTICS

Capacity per unit: 4.75 or 14.25 or 23.8 MB

Speed: 3600 RPM

Transfer rate: 5 megabits per second

Access time

Track to track: 12 ms

Average stroke: 45 ms

Average latency: 8.3 ms



Integrated Disk Drive

The integrated disk drive is a low cost mass storage device which offers a capacity of 10M-bytes utilizing Winchester technology. It shares the same controller and peripheral adapter as the integrated flexible disk included with each DCP/10A, and is physically located within the DCP/10A enclosure. It is a cost effective storage device for those systems not requiring the higher capacity available on the 8409 free-standing disk subsystem. It provides storage for the Telcon software, including the operating system and diagnostic programs. It also provides storage for logging network operation statistics as well as configuration files.

FUNCTIONAL CHARACTERISTICS

Storage available: 10 megabyte

Access time

Track to track 18 ms

Average latency: 8.33 ms

Rotational speed:
3600 RPM

Transfer rate

5 M bits/sec

POWER REQUIREMENT

Nominal voltage: 100, 120, 200,
240 volts

Nominal frequency: 50 and 60 Hz

Remote Control Module

The remote control module provides the means to control the DCP/10A in an unattended, remote environment. It provides control of power, system program load and start/stop operations for as many as *four* processors. Control commands are transmitted to the remote control module via serial communications circuits.

Line Switch Module

The line switch module is designed to support unattended operation of the communications subsystem. It permits switching communications lines and peripherals subsystems between DCP/10As. Switching control may be effected in three ways: manually; under remote program control; and under local program control. Under the control of the Telcon software, the line switch module enhances the operation of redundant configurations in both local and unattended modes.

Summary

The SPERRY DCP/10A Telcon system is a hardware/software product that easily handles the diverse needs of today's network users. It provides a modular architecture that protects the investment of the long-term user. This product incorporates constantly improving technology and permits expansion free from constraints on growth and utilization.

This product was designed and developed in compliance with the SPERRY Distributed Communications Architecture.

For today's telecommunications market, the DCP/10A offers significant price/performance, technological superiority and ease of migration.

Telcon System



